

REMARKS

Claims 1-5 are pending in this application. Claims 2-5 stand rejected and claim 1 is withdrawn. By this Amendment, claims 2 and 3 have been amended. The amendments made to the claims do not alter the scope of these claims, nor have these amendments been made to define over the prior art. Rather, the amendments to the claims have been made to improve the form thereof. In light of the amendments and remarks set forth below, Applicants respectfully submit that each of the pending claims is in immediate condition for allowance.

Applicants note that support for the present amendments including the precipitation of titanium can be found at least at paragraphs 29, 39, 40, and 42.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over JP 07258803. Additionally, claims 2, 4, and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over JP 62047466 ("the JP '466 patent").

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 07258803 ("the JP '803 patent"). Applicants respectfully request reconsideration and withdrawal of this rejection.

Among the limitations of independent claim 2 not present in the JP '803 patent is a step of performing additional cold rolling on the copper alloy material after the precipitation treatment.

Contrary to the Examiner's assertion, this step is not disclosed in the JP '803 patent. The Examiner states that In re Peterson supports the obviousness rejection because Peterson stands for the proposition that a *prima facie* case of obviousness typically exists when the ranges of a claimed composition/steps overlap the ranges disclosed in the prior art. See Office Action at 3. However, In re Peterson does not

stand for any proposition with respect to the steps of a method. In fact, in In re Peterson, the court only addressed the percentages or ranges of compositions. Therefore, the JP '803 patent cannot be used to establish a *prima facie* case of obviousness with respect to pending claim 2 and its dependent claims.

Claims 2, 4, and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over the JP '466 patent. Among the limitations of independent claim 2 not present in the cited reference is additional cold rolling. While the JP '466 patent presents high total reduction ratio ranging from 64% to 88% it fails to render the claims of the present application obvious. The JP '466 patent aims at the realization of high yield strength and stress relaxation characteristics. In other words, it differs from the present invention that aims at the realization of good bend formability and high yield strength.

The Examiner's citation to In re Peterson does not cure the deficiency in the JP '466 patent. As noted above, In re Peterson is directed to ranges of compositions. In re Peterson is not directed to the steps of a process. Therefore, the claims are not obvious in light of the JP '466 patent.

The present invention teaches a sequence solution treatment, cold rolling, precipitation, additional cold rolling, and stress relaxation annealing. That is, the present process performs precipitation between the cold rolling and additional cold rolling. In contrast, the JP '803 patent performs solution treatment between two cold rolling steps, and the JP '466 patent performs aging just after the cold rolling. In addition, the present invention performs annealing after the secondary cold rolling (or additional cold rolling), but the JP '803 patent performs aging. Applicants respectfully submit that each of the steps of the present invention has a different meaning and object compared to the cited references.

Applicants note that precipitation and additional cold rolling has an outstanding effect. That is Ti is precipitated in Cu by way of precipitation, so that the dislocation caused by additional cold rolling does not reduce the heat resistance because of the pinning of precipitates. Due to the precipitation performed in advance, additional cold rolling can be performed at a relatively low reduction ratio. Thus, the present invention can produce desired materials having relatively low hardening, high bend formability, and high yield strength.

Applicants hereby clarify the meaning and objects of the present specification. The solution treatment and the precipitation treatment or aging differ from each other in meaning.

In the step of solution treatment, Ti or minor additional element is dissolved into Cu, which is thus softened so as to prepare for the subsequent precipitation. Specifically, the material (e.g., Ti-Cu) is heated at 900°C for several minutes and is then rapidly cooled; this is called "solution treatment."

In the step of precipitation treatment or aging, the material (e.g., Ti-Cu), which is subjected to solution treatment in advance, is heated at 450°C for several hours so as to precipitate and harden Ti in Cu. See at least paragraphs 29, 39, 40, and 42.

In the step of stress relaxation annealing, minor heat treatment is performed for the purpose of eliminating distortions that occurs inside of the material due to cold rolling. Annealing temperature is not specifically determined, however, the annealing is performed at a relatively low temperature such that over aging does not occur and the material, which is once hardened by way of the precipitation, is not softened.

It is preferable to perform the stress relaxation annealing at a low temperature for a long time or at a high temperature for a short time, wherein the annealing is

preferably performed at 200-700°C for 0.5-1.5 hours or at least 300-950°C for 100-1000 seconds in the present invention. This range is now explicitly recited in claim 3.

It should be noted that the JP '803 patent is simply characterized by providing fine crystal grains.

In contrast, the present invention is characterized by introducing additional cold rolling after the precipitation treatment (or aging), thus realizing high yield strength. It is also characterized by reducing the total reduction ratio as low as possible, thus improving bend formability. For this reason, the Applicants submit that the present invention is not obvious in light of the JP '803 or JP '466 patents.

Applicants have responded to all of the rejections and objections recited in the Office Action. Reconsideration and a Notice of Allowance for all of the pending claims are therefore respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Application No. 10/653,352

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If the Examiner believes an interview would be of assistance, the Examiner is welcome to contact the undersigned at the number listed below.

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Respectfully submitted,

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